

CLAIMS

1. A color image sensor unit having a light source for lighting, image forming means for forming an image of reflected light which is irradiated by the light source and reflected from an object to be read, and a sensor array for converting the image formed by the image forming means into an electric signal,

wherein said sensor array has at least three pixel arrays each of which is constituted by plural pixels, each of the pixel arrays has a color filter which transmission wavelength region is different from each other, and

said light source has at least three light emitting elements, each of which emits light having a different wavelength from each other and is able to be independently driven.

2. The color image sensor unit according to claim 1, wherein the wavelengths of the light emitting elements and the transmission wavelength regions of the color filters include three primary colors of red, green and blue.

3. The color image sensor unit according to claim 2, wherein a half-value width of spectral spectrum of each of the three primary colors of the wavelengths of the

light emitting elements is narrower than a half-value width of spectral spectrum of the color filter of the corresponding color.

4. The color image sensor unit according to any one of claims 1 to 3, wherein said light emitting element includes an LED.

5. A color image sensor unit comprising:

a light source having at least three light emitting elements each of which emits light having a different wavelength from each other;

a light guide member for guiding the light irradiated from the light source in the main scanning direction of an original, and irradiating over the width in the main scanning direction of the original;

an image forming lens for forming an image of reflected light which is irradiated by said light guide member and reflected by the original; and

a sensor array having at least three pixel arrays, each of which comprises plural pixels and has a color filter with a transmission wavelength region different for each of the pixel arrays, and converting the image formed by said image forming lens into an electric signal,

wherein each of the light emitting elements of the light source can be independently driven.

6. An image reading apparatus comprising:

a color image sensor unit having a light source that has at least three light emitting elements each of which emits light having a different wavelength from each other, an image forming lens that forms an image of reflected light which is irradiated by the light source and reflected by an original, and a sensor array that has at least three pixel arrays each of which has plural pixels, and color filters each of which has a different transmission wavelength region for each of the pixel arrays, and that converts the image formed by the image forming lens into an electric signal;

moving means for moving the original and said color image sensor unit relative to each other in the direction substantially perpendicular to the pixel array;

driving means for independently driving each of the light emitting elements of the light source; and

output means for generating an image signal corresponding to the original on the basis of an image signal corresponding to each color, which the image signal is outputted from said color image sensor unit in synchronous with a light emission driven by said driving means, and for outputting the generated image signal.

7. The image reading apparatus according to claim 6, wherein said driving means independently sets light emission start timings and light emission periods of the respective light emitting elements to drive the light emitting elements.

8. The image reading apparatus according to claim 6, further comprising detecting means for detecting a relative speed of the original moved by said moving means, wherein said driving means changes drive timings of the respective light emitting elements in accordance with the relative speed detected by said detecting means.

9. The image reading apparatus according to claim 6, wherein the light source has light emitting elements of RGB,

wherein the three pixel arrays of the sensor array are arranged apart from each other at a predetermined interval in parallel with the direction substantially perpendicular to the moving direction of the original relative moved by said moving means, and

wherein said driving means drives the respective light emitting elements of the light source to emit light during a period in which image signals outputted from each of the three pixel arrays of the sensor array relative moved by said moving means, overlap with each

other.

10. The image reading apparatus according to claim 6, wherein the wavelengths of the light emitting elements and transmission wavelength regions of the color filters include three primary colors of red, green and blue, and wherein a half-value width of spectral spectrum of each of the three primary colors of the wavelengths of the light emitting elements is narrower than a half-value width of spectral spectrum of the color filter of the corresponding color.

11. A control method of an image reading apparatus comprising a color image sensor unit having a light source that has at least three light emitting elements each of which emits light having a different wavelength from each other, an image forming lens that forms an image of reflected light which is irradiated by the light source and reflected by an original, and a sensor array that has at least three pixel arrays each of which is constituted by plural pixels, and color filters each of which has a different transmission wavelength region for each of the pixel arrays, and that converts the image formed by the image forming lens into an electric signal, the control method comprising:

a moving step of moving an original and the color

image sensor unit relative to each other in the direction substantially perpendicular to the pixel arrays;

a driving step of independently driving the respective light emitting elements of the light source to enable the original relative moved in said moving step to be irradiated; and

an outputting step of generating an image signal corresponding to the original on the basis of image signals corresponding to respective colors, which image signals are outputted from the color image sensor unit in synchronous with the light emission driven in said driving step, and of outputting the generated image signal.

12. The control method of the image reading apparatus according to claim 11, wherein in said driving step, light emission start timings and light emission periods of the respective light emitting elements are independently set for driving.

13. The control method of the image reading apparatus according to claim 11, further comprising a detecting step of detecting the relative speed of the original moved in the moving step, wherein in said driving step, the drive timings of the respective light emitting elements are changed in accordance with the relative

speed detected in said detecting step.

14. The control method of the image reading apparatus according to claim 11, wherein the light source has light emitting elements of RGB, wherein each of the three pixel arrays of the sensor array is arranged apart from each other by a predetermined interval in parallel with the direction substantially perpendicular to the moving direction of the original relative moved in said moving step, and

wherein in said driving step, the respective light emitting elements of the light source are driven to emit light during a period in which the image signals outputted from the respective three pixel arrays of the sensor array relative moved in said moving step, overlap with each other.

15. The control method of the image reading apparatus according to claim 11, wherein the wavelengths of the light emitting elements and the transmission wavelength regions of the color filters include three primary colors of red, green and blue, and wherein a half-value width of spectral spectrum of each of the three primary colors of the wavelengths of the light emitting elements is narrower than a half-value width of spectral spectrum of the color filter of the corresponding color.